

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 13

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HELMUT BAHRMANN, GREGOR DECKERS, WOLFGANG GREB,
PETER HEYMANN, PETER LAPPE, THOMAS MULLER,
JURGEN SZAMEITAT and ERNST WIEBUS

Appeal No. 95-3931
Application 08/163,086¹

HEARD: January 12, 1999

Before WEIFFENBACH, OWENS and WALTZ, *Administrative Patent Judges*.

WEIFFENBACH, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1-11, which are all of the claims in the application. We affirm the examiner's rejection, but for reasons

¹ Application for patent filed December 7, 1993.

different from those proffered by the examiner.

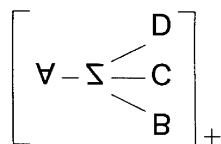
The Claimed Subject Matter

The claimed subject matter on appeal is directed to a process for preparing predominately unbranched primary alcohols having 10 carbon atoms. Claim 1 is representative of the claims on appeal and reads as follows:

A process for the preparation of predominantly unbranched primary alcohols having 10 carbon atoms comprising a reaction of an olefin with carbon monoxide and hydrogen to form at least one aldehyde, said reaction taking place in a liquid phase at 20E to 150E C and under a pressure of 0.1 to 20 MPa in the presence of water and a catalyst, said catalyst comprising metallic rhodium and/or a rhodium compound and a water-soluble phosphine, and hydrogenation of said aldehyde to at least one corresponding alcohol, said process further comprising

reacting at least one said olefin, having 9 carbon atoms and which is obtained from the Fischer-Tropsch synthesis, in the presence of at least one water soluble salt comprising an anion having a charge thereon, and at least one cation, the number of which corresponds to said charge,

said anion being a phosphine containing at least one sulfonated or carboxylated aromatic radical, said cation being of the formula



wherein Z is nitrogen or phosphorous, A is alkyl having 7 to 18 carbon atoms or aralkyl having 7 to 18 carbon atoms, and B, C, and D are individually straight or branched chain alkyl having 1 to 4 carbon atoms.

Appeal No. 95-3931
Application 08/163,086

References of Record

The following references of record are relied upon by the examiner as evidence of obviousness:

Mertzweiller et al. (Mertzweiller)	2,560,360	Jul. 10, 1951
Rottig et al. (Rottig)	2,755,308	Jul. 17, 1956
Bahrman et al. (Bahrman)	4,578,523	Mar. 25, 1986
Cornils et al. (Cornils I)	4,593,126	Jun. 3, 1986
Bach et al. (Bach I)	4,795,727	Jan. 3, 1989
Bach et al. (Bach II)	4,801,754	Jan. 31, 1989
Cornils et al. (Cornils II)	4,808,757	Feb. 28, 1989
Bach et al. (Bach III)	4,808,758	Feb. 28, 1989
Herrmann et al. (Herrmann)	5,200,380	Apr. 6, 1993

The Rejections

I. Claims 1-4, 7 and 11 stand rejected under 35 U.S.C. § 103 as being unpatentable over Rottig or Mertzweiller in view of Bahrman and appellants' acknowledged state of the art.

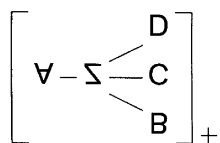
II. Claims 5 and 6 stand rejected under 35 U.S.C. § 103 as being unpatentable over Rottig or Mertzweiller in view of Bahrman and appellants' acknowledged state of the art and further in view of Cornils I, Cornils II, Bach I, Bach II or Bach III. In his answer, the examiner did not specifically identify which Cornils or Bach patents he was relying on. We assume that he is relying on each of the references.

III. Claims 8-10 stand rejected under 35 U.S.C. § 103 as being unpatentable over Rottig or Mertzweiller in view of Bahrman and appellants' acknowledged state of the art and further in view of Herrmann.

Opinion

Appellants state on page 3 of the brief that “Claims 1 to 11 stand together.” In each of the aforementioned rejections, Rottig, Mertzweiller and Bahrmann are common to all of the rejections. We note that appellants arguments’ in the brief addressed only the combination of Rottig or Mertzweiller in view of Bahrmann and that appellants contend that the references as combined are not suggestive of the claimed subject matter. We have carefully considered appellants’ arguments and the position of the examiner, and for the reasons set forth below, we will affirm the rejections, albeit for a rationale which differs from that set forth by the examiner. Because our affirmance is based on a different rationale, we denominate the affirmance as a new grounds of rejection under the provisions of 37 CFR § 1.196(b) (1998).

Claim 1 is directed to a process for the preparation of predominantly unbranched primary alcohols having 10 carbon atoms. The process comprises reacting CO and H₂ in the presence of water and a rhodium or a rhodium compound catalyst with an olefin having 9 carbon atoms formed from a Fischer-Tropsch synthesis in the presence of a water soluble salt having a phosphine anion containing at least one sulfonated or carboxylated aromatic radical and a cation having the following formula



where Z can be a nitrogen atom, A is a C₇ to C₁₈ alkyl or aralkyl group, and B, C and D are C₁ to C₄

straight or branched alkyl groups to form an aldehyde which is then hydrogenated to the corresponding alcohol. The reaction occurs in a liquid phase at 20E to 150EC under a pressure of 0.1 to 20 MPa (i.e., 1 to 200 bar).

On page 5 of the brief, appellants state that they “agree with the Examiner’s statement that both Rottig and Mertzweiller teach the preparation of an olefin by the Fischer-Tropsch synthesis followed by oxonation of the olefin with synthesis gas to the aldehyde, which is then hydrogenated to the alcohol.” They argue, however, that their invention

lies in the selection of a specific starting material (Fischer-Tropsch olefin), and its processing by one of several known oxo processes, to form a specified product. Neither Rottig nor Mertzweiller specifically teaches the use of C₉ Fischer-Tropsch [sic, Fischer-Tropsch] olefins as a reactant for the synthesis of a high quality plasticizer. Further, neither Rottig nor Mertzweiller recommend that the oxonation be carried out in a two-phase reaction, using rhodium/phosphine catalysts dissolved in water. Instead, both exclusively use a cobalt-based process.

The examiner relies on Bahrmann to “show that the hydroformylation of olefins to aldehydes takes place in the liquid phase in the presence of water and rhodium or a rhodium compound and a water soluble phosphine containing a sulfonated aromatic radical and a cation such as dodecyl-dimethyl ammonium salt at 20-150EC and 1-200 bar” (answer: p. 4). Appellant does not dispute this finding, but contends that “Bahrmann is not specifically directed to the formation of C₁₀ alcohols from C₉ Fischer-Tropsch olefins, nor would the improved results, when such alcohols are used in the formation of plasticizers, be taught or suggested” (brief: p. 5).

We are in agreement with the examiner's ultimate conclusion of obviousness, but for different reasons. According to appellants, it is the object of their invention to "develop a process which starts from inexpensive raw materials and which produces a high yield of the desired alcohols by a simple route" and which produces straight chain alcohols while minimizing the formation of isomers (specification: p. 3).

Mertzweiller discloses a four step process of producing alcohols comprising (i) a Fischer-Tropsch synthesis of a hydrocarbon product by reacting CO and H₂ in the presence of a catalyst, (ii) fractionating the product to get a desired olefinic fraction for the production of desired oxygenated organic compounds, (iii) hydroformylating the olefinic fraction with CO and H₂ in the presence of a catalyst such as cobalt to form an aldehyde, and (iv) hydrogenating the aldehyde to an alcohol (col. 1, lines 1-3, 13-30; col. 2, lines 19-30; col. 3, line 68 to col. 4, line 8). The reaction conditions for the hydroformylating step are within appellants' claimed ranges in that the reaction is conducted at pressures in the range of about 100 to 300 bar or 10 to 30 MPa and at temperatures ranging from about 65E C to about 230E C (col. 2, lines 4-8).

Mertzweiller further discloses at col. 1, lines 31-38 that

[t]he alcohols produced by this process normally contain one more carbon atom than the olefin used as the starting material, the position of the added hydroxyl group depending on the positions of the double bond in the olefins. The olefins to be used as starting material may therefore be selected as a function of the purpose for which the product alcohol is desired.

From this teaching, it would have been obvious to a person having ordinary skill in the art to select a C₉ olefin to prepare a C₁₀ alcohol.

Bahrman discloses a hydroformylating process wherein olefins are reacted with CO and H₂ in the

presence of water, a rhodium catalyst, and a water soluble phosphine as recited in appellants' claim 1 (col. 2, lines 33-54). The reaction takes place in a liquid phase at 20E to 150EC and under a pressure of 0.1 to 20 MPa. Bahrmann further discloses at col. 1, lines 10-19 that

[a]part from cobalt which is widely used in industry as a catalyst metal, rhodium has also been gaining in importance recently. In contrast to cobalt, rhodium makes it possible for the reaction to be carried out at low pressure and furthermore, the reaction takes place with enhanced formation of straight-chained n-aldehydes with iso-aldehydes only being formed to a minor degree.

In view of the desirability of producing a straight chain alcohol having a minimum amount of isomers, a person having ordinary skill in the art would have been motivated to modify the Mertzweiller process to substitute Bahrmann's hydroformylating process for that disclosed in Mertzweiller. Moreover such a person would have been further motivated to use Bahrmann's process because the hydroformylating step can be carried out at lower pressures and Bahrmann's process provides higher yields with C₆ to C₂₀ olefins (col. 1, lines 56-61; col. 3, lines 59-63).

For the foregoing reasons, we affirm the rejection of claims 1-4, 7 and 11 for obviousness. However, because our affirmance is based on a different rationale than that advanced by the examiner and because we rely on only the Mertzweiller and Bahrmann references, we denominate our affirmance as a new ground of rejection under 37 CFR § 1.196(b). We note that appellants did not present arguments specifically addressing (i) the rejection of claims 5 and 6 under 35 U.S.C. § 103 over Rottig or Mertzweiller in view of Bahrmann, Cornils I, Cornils II, Bach I, Bach II or Bach III and appellants' acknowledged state of the art, and (ii) the rejection of claims 8-10 under 35 U.S.C. § 103 over Rottig or

Appeal No. 95-3931
Application 08/163,086

Mertzweiller in view of Bahrmann, Herrmann and appellants' acknowledged state of the art. Accordingly, these rejections are summarily affirmed for the same reasons set forth in our affirmance of the rejection of claims 1-4, 7 and 11, *supra*.

This decision contains new grounds of rejection pursuant to 37 CFR § 1.196(b) (amended effective December 1, 1997, by final rule notice, 62 Fed. Reg. 53,131, 53,197 (October 10, 1997), 1203 Off. Gaz. Pat. & Trademark Office 63, 122 (Oct. 21, 1997)). 37 CFR § 1.196(b) provides that "[a] new ground of rejection shall not be considered final for purposes of judicial review."

37 CFR § 1.196(b) also provides that the appellants, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of proceedings (37 CFR § 1.197(c)) as to the rejected claims:

(1) Submit an appropriate amendment of the claims so rejected or a showing of facts relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the application will be remanded to the examiner. . . .

(2) Request that the application be reheard under § 1.197(b) by the Board of Patent Appeals and Interferences upon the same record. . . .

Appeal No. 95-3931
Application 08/163,086

No time period for taking any subsequent action in connection with this appeal may
be extended under 37 CFR § 1.136(a).

AFFIRMED
37 CFR § 1.196(b)

CAMERON WEIFFENBACH)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
TERRY J. OWENS)	
Administrative Patent Judge)	APPEALS AND
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Appeal No. 95-3931
Application 08/163,086

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